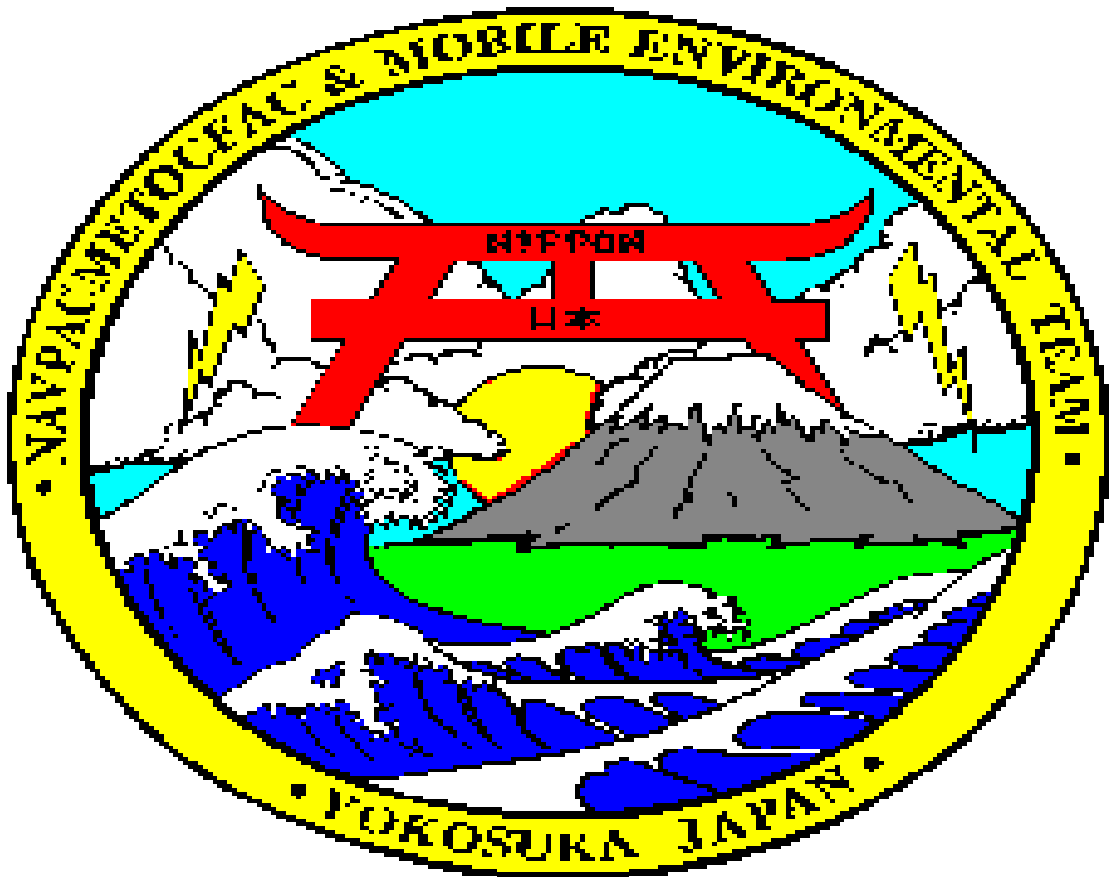
A satellite image of a tropical cyclone, showing a well-defined eye and spiral cloud bands over a dark blue ocean. The image is the background for the entire page.

QUARTER MASTER WEATHER OBSERVATION & SYNOPTIC ENCODING TRAINING

**NAVPACMETOCCEN
FLEET SERVICES**

**NAVAL PACIFIC METEOROLOGY AND
OCEANOGRAPHY CENTER**



QM WEATHER OBSERVER COURSE

PREPARED BY:

MOBILE ENVIRONMENTAL TEAM

COURSE LENGTH: ONE AND HALF HOUR

REFS:

1. NAVMETOCCOMINST 3144.1D (MAR 96)
2. FEDERAL METEOROLOGICAL HANDBOOK
(FMH-1) (DEC 95)
3. VARIOUS MESSAGES

“WEATHER OBSERVATIONS” WHY DO WE TAKE OBSERVATIONS AT SEA?

- **CINCPACFLT OORDER 201 ANNEX H.**
- **FLEET COMMANDERS OORDER 201/
OPTASKS**
- **SHIPBOARD OBSERVATIONS ARE ESSENTIAL
INPUT TO FLEET NUMERICAL WEATHER
MODELS**
- **OPAREA FORECASTS, WEAX, OTSR,
SPECIALIZED FORECASTS ARE BASED ON
THESE FLEET NUMERICAL WEATHER
MODELS.**

SHIP INFORMATION TOP COLUMN (HORIZONTAL)

- **DAY (UTC):**
 - ENTER THE DATE. THE DATE CHANGES AT **0001Z** WITH THE START OF A NEW FORM.
(The first observation on the form is the 2355-2359 observation)
- **MONTH/YEAR :**
 - ENTER THE MONTH IN 3 LETTERS AND THE YEAR IN 4 DIGITS.
(APR, MAY, FEB, ETC..., YEAR 1996, 1997, ETC...)
- **SHIPS CALL SIGN:**
 - ENTER THE SHIPS 4 LETTER IDENTIFIER
(NJAM, NJPT, NGPU, NHPO, NHUN, ETC...)
- **SHIPS TYPE, NAME & HULL NUMBER:**
 - CHECK USS, USNS OR OTHER
 - ENTER SHIPS FULL NAME & HULL NUMBER.
- **RATE OF OBSERVER:**
 - CHECK THE QUARTERMASTER BOX.

SFC WX OBS	DAY	MONTH	YEAR	CALL	(USS)	QM
	(UTC)			SIGN	(USNS)	AG

PART I

(COLS 1 & 2)

- **TYPE OF REPORT: (COL 1)**
- **ME (METAR):** STANDARD HOURLY OBSERVATION
- **SP (SPECIAL):** TAKEN WHEN SIGNIFICANT WEATHER EVENTS OCCUR, AIR CRAFT MISHAPS, MAN OVERBOARD, OR AS DICTATED BY THE CRITERIA TABLE II-2-1).
- **DATE AND TIME COLUMN 2:**
 1. DO NOT RECORD THE DATE
 2. RECORD THE TIME IN UTC ONLY
MUST BE **WITHIN 5 MINUTES OF THE HOUR** (0155, 0357, 0959, ETC...).

TYPE	DATE &	WIND				VISIBILITY
METAR	TIME	DIRECTION	SPEED	GUST	VARIABILITY	
SPECI	(X) UTC () LST	(true)	(knots)	(knots)	(true)	(Visibility)
1	2	3	4	5	6	7
ME	1156					
ME	1256					

WIND DIRECTION (COL 3)

- **NOTE:** OBSERVE WIND DIRECTION/SPEED AVERAGE FOR PAST **2 MINUTES**.
 - OBSERVE VARIATIONS IN DIRECTION AND FLUCTUATIONS IN SPEED DURING THE PERIOD.
 - **WIND DIRECTION (COLUMN 3):**
 1. RECORD TRUE WIND DIRECTION **FROM** WHICH THE
WIND IS BLOWING, TO THE NEAREST TEN DEGREES.
 2. ENTER "**000**" WHEN THE WINDS ARE CALM.
 3. ENTER THE MEAN WIND DIRECTION WHEN **WIND DIRECTION VARIES BY 60 DEG OR MORE AND WIND SPEEDS ARE GREATER THAN 06 KNOTS.**
- EXAMPLE:** (360, 280, WOULD BE 320)

TYPE	DATE &		WIND			VISIBILITY
MEIAR	TIME	DIRECTION	SPEED	GUST	VARIABILITY	(nm)
SPECI	(X) UTC	(true)	(knots)	(knots)	(true)	
	() LST					
1	2	3	4	5	6	7
ME	1156	320				
ME	1258	310				
SP	1327	000				

WIND: SPEED, GUSTS & VARIABILITY (COLS 4, 5, & 6)

- WIND SPEED (COL 4):

- RECORD WIND SPEED IN WHOLE KNOTS.
- FOR CALM WINDS ENTER "00"
- SPEEDS <10 KNOTS PREFIX WITH A ZERO, EX. "07"

- WIND GUSTS (COL 5) (AG):

- ENTER WIND GUSTS IN **COL 5** WHEN THE WIND **SPEED** FLUCTUATES **10 KNOTS** OR MORE BETWEEN PEAKS & LULLS.
- PREFIX SPEED OF GUST WITH A "G".

- WIND VARIABILITY (COL 6):

- ENTER WHEN THE WIND **DIRECTION** VARIES BY **60 DEGREES** OR MORE AND WIND SPEEDS ARE > **06 KNOTS**.
- ENTER THE EXTREMES OF DIRECTIONAL VARIABILITY.

TYPE METAR SPECI	DATE & TIME (X) UTC () LST	WIND				VISIBILITY (nm)
		DIRECTION	SPEED	GUST	VARIABILITY	
		(true)	(knots)	(knots)	(true)	
		3	4	5	6	
1	2					7
ME	1156	320	12	G20	280V360	
ME	1258	310	06			
SP	1327	000	00			

VISIBILITY (COL 7)

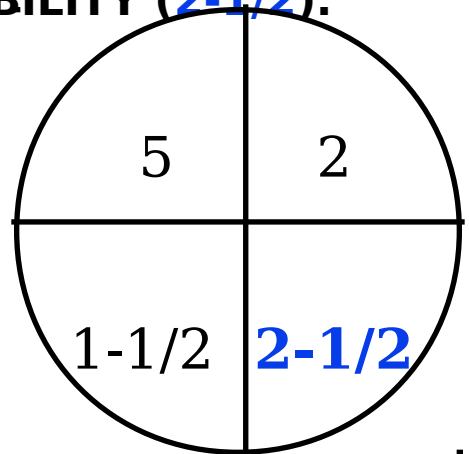
- **PREVAILING VISIBILITY:** THE GREATEST DISTANCE THAT OBJECTS CAN BE SEEN THROUGHOUT AT LEAST 1/2 OF THE HORIZON CIRCLE, NOT NECESSARILY CONTINUOUS

DETERMINING PREVAILING VISIBILITY:

1. DETERMINE THE VALUES OF THE DIFFERING SECTORS THAT YOUR GOING TO USE.
2. ADD THE SECTORS WITH THE GREATEST VISIBILITY TOGETHER UNTIL HALF OR MORE OF THE HORIZON CIRCLE IS OBTAINED.
3. THIS IS YOUR PREVAILING VISIBILITY (**2-1/2**).

FOUR SECTORS	
VISIBILITY (MILES)	APPROXIMATE DEGREES
5	NW 90
2 1/2*	SW 90

180	
2	NE 90
1 1/2	SE 90



TYPE METAR	DATE & TIME	WIND				VISIBILITY
		DIRECTION	SPEED	GUST	VARIABILITY	
SPECI	(X) UTC	(true)	(knots)	(knots)	(true)	
	() LST					
1	2	3	4	5	6	7
ME	1156	320	12	G20	280V360	7
ME	1258	310	06			3
SP	1327	000	00			21/2

VISIBILITY (COL 7 CONT)

**ENTER ONLY THE VISIBILITY VALUES LISTED IN
THE TABLE BELOW:**

**NOTE: DO NOT INCLUDE PRESENT WEATHER OR
OBSTRUCTIONS FOR VISIBILITIES 7NM OR GREATER.**

REPORTABLE VALUES		
NAUTICAL MILES		
0	2-1/2	10
1/16	3	
1/8	4	
1/4	5	
1/2	6	
1	7	
1-1/2	8	
2	9	

TYPE	DATE &	WIND				VISIBILITY
MEIAR	TIME	DIRECTION	SPEED	GUST	VARIABILITY	
SPECI	(X) UTC	(true)	(knots)	(knots)	(true)	
	() LST					
1	2	3	4	5	6	7
ME	1156	320	12	G20	280V360	7
ME	1258	310	06			3
SP	1327	000	00			2 1/2

REVIEW (COLS 1-7)

- COLS 1 AND 2:

- **METAR** IS A STANDARD HOURLY OBSERVATION.
- **SPECIAL** IS FOR SIGNIFICANT EVENTS.
- **TIME:** ENTER TIMES FROM **55 TO 59** MINUTES PAST THE HOUR ENTER TIME OF SPECIAL EVENT OCCURRED.

- COL 3:

- ENTER WIND DIRECTION IN TENS OF DEGREES (310, 050, ETC...)
- ENTER **"000"** FOR CALM WINDS

- COL 4:

- ENTER WIND SPEED IN WHOLE KNOTS (05, 10, 30, ETC...).
- ENTER **"00"** FOR CALM WINDS, ALWAYS AT LEAST 2 DIGITS

- COLS 5 AND 6:

- ENTER GUSTS (AG) ONLY WHEN OBSERVED WINDS FLUCTUATE 10 KNOTS OR MORE BETWEEN PEAKS AND LULLS.
- ENTER RANGE OF VARIABILITY WHEN WIND **DIRECTION VARIES BY 60 DEGREES OR MORE & WIND SPEEDS ARE > 06 KNOTS.**

- COL 7:

TYPE	DATE &	WIND				VISIBILITY
METAR	TIME	DIRECTION	SPEED	GUST	VARIABILITY	(nm)
SPECI	(X) UTC () LST	(true)	(knots)	(knots)	(true)	
1	2	3	4	5	6	7
ME	1156	320	12	G20	280V360	7
ME	1258	310	06			3
SP	1327	000	00			21/2

PRESENT WEATHER (COL 9)

ENTER PRESENT WEATHER IN ORDER OF PRECEDENCE.

- WHEN MORE THAN ONE TYPE OF PRESENT WEATHER IS REPORTED AT THE SAME TIME, REPORT IN THE FOLLOWING ORDER:

**1. TORNADIC ACTIVITY (INCL FUNNEL
CLOUDS & WATERSPOUTS).**

2. THUNDERSTORMS.

**3. PRECIPITATION BASED ON INTENSITY
THEN OBSTRUCTIONS**

4. LEFT TO RIGHT IN TABLE ON NEXT SLIDE.

PRESENT WEATHER 9	SKY CONDITION	TEMP	DEW
		(C)	POINT
			(C)
	10	11	12
HZ			
-SHRAFG			

PRESENT WEATHER TABLE

- EXAMPLES:

- THUNDERSTORM WITH A RAINSHOWER: TSRA
- LIGHT RAIN, DRIZZLE & FOG: -DZRAFG
- WATERSPOUT & MODERATE RAINSHOWER: +FCSHRA
- RAINSHOWER SOUTH: VCSHRA
- FOG & HAZE: FGHZ
- BLOWING SPRAY: BLPY

QUALIFIER		WEATHER PHENOMENA		
INTENSITY OR PROXIMITY	DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
1	2	3	4	5
- Light	MI Shallow	DZ Drizzle	BR Mist	PO Well
Moderate	PR Partial	RA Rain	FG Fog	Developed
+ Heavy	BC Patches	SN Snow	FU Smoke	Dust/Sand
VC in the vicinity	DR Low Drifting	SG Snow Grains	VA Volcanic Ash	Whirls
	BL Blowing	IC Ice Crystals	DU Widespread	SQ Squalls
	SH Shower(s)	PE Ice Pellets	Dust	FC Funnel Cloud
	TS Thunderstorm	GR Hail	SA Sand	Tornado
		GS Small Hail	HZ Haze	Waterspout
		and/or Snow	PY Spray	SS Sandstorm
		Pellets		DS Duststorm
		UP Unknown		
		Precipitation		
1. Tornadoes and waterspouts shall be coded as +FC.				

SKY CONDITION (COL 10)

- SKY CONDITION DEFINITIONS:

- A . **SKY COVER:** THE AMOUNT OF THE CELESTIAL DOME HIDDEN BY CLOUDS OR AN OBSCURATION.
- B. **SUMMATION LAYER AMOUNT:** THE AMOUNT OF SKY COVER AT OR BELOW EACH REPORTED LAYER. (BEGIN LOW, THEN MID, THEN HIGH). NO SINGLE CLOUD LAYER CAN HAVE A SUMMATION AMOUNT >8/8THS.
- C. **LAYER HEIGHT:** THE HEIGHT OF THE BASE OF EACH REPORTED LAYER OF CLOUDS.
- D. **CEILING:** THE HEIGHT OF THE LOWEST LAYER OF CLOUDS THAT IS BROKEN OR OVERCAST (>4/8 OR >1/2 THE SKY).

			(C)	(C)	(ins)
9	10	11	12	20	13
	FEW010 SCT045 BKN180				
HZ	SCT008 BKN040				
-SHRAFG	BKN008 OVC025				

SKY CONDITION (COL 10 CONT)

CLOUDS TYPES AND HEIGHTS:

- **LOW CLOUDS** (BASES NR SURFACE TO 6,500 FT)
ST, SC, CU, TCU, & CB.
- **MIDDLE CLOUDS** (6,500 TO 16,500-23,000 FT)
AS, AC, & NS(heights depend on region-ie polar, tropical)
- **HIGH CLOUDS** (ABOVE 16,500 FT)
CI, CS, CC
- ENTER CLOUDS BASE HEIGHTS IN HUNDREDS COL

10 ACCORDING TO THE FOLLOWING TABLE:

Range of Height Values (feet)	Reportable Increment (feet)
≤5,000	To nearest 100
>5,000 but <10,000	To nearest 500
>10,000	To nearest 1,000

EX: 045 IS 4,500 FT (NEAREST 100 FT)

180 IS 18,000 FT (NEAREST 1,000 FT)

9	10	11	12	20
	FEW010 SC T045 BKN180			
HZ	SC T008 BKN040			
SHRAFG	BKN008 OVC025			

SKY CONDITION (COL 10 CONT)

STEPS FOR DETERMINING SKY COVER:

- 1 ESTIMATE THE AMOUNT OF SKY COVERED BY THE LOWEST LAYER.
- 2 DETERMINE ADDITIONAL LAYERS OF CLOUDS ABOVE THE LOWEST LAYER USING THE SUMMATION PRINCIPLE.
- 3 RECORD THE HEIGHT OF EACH CLOUD LAYER IMMEDIATELY FOLLOWING THE SKY COVER AMOUNT.

USE THE TABLE BELOW TO MATCH THE PROPER CONTRACTION TO THE AMOUNT FOR THE LAYER.

REPORTABLE CONTRACTION	MEANING	SUMMATION AMOUNT OF LAYER
VV	Vertical Visibility	8/8
SKC	Clear	0
FEW	Few or Trace	1/8 - 2/8
SCT	Scattered	3/8 - 4/8
BKN	Broken	5/8 - 7/8
OVC	Overcast	8/8

PRESENT WEATHER	SKY CONDITION	TEMP (C)	DEW POINT (C)	WET BULB (C)	ALTIMETER SETTING (ins)
9	10	11	12	20	13
	FEW010 SCT045 BKN180				
HZ	SCT008 BKN040				
-SHRAFG	BKN008 OVC025				

OBTAINING ACCURATE TEMPERATURES

- ENSURE PSYCHROMETERS ARE USED IN SHADY, **WELL VENTILATED AREAS**.
- ENSURE PSYCHROMETERS ARE CLEAR OF AREAS THAT ARE SUBJECT TO:
 1. **EXTERIOR VENTILATION DUCTS**
 2. **NO VENTILATION**
 3. **EXCESSIVE DECK PLATE HEATING**
- **ENSURE WET BULB WICK IS CLEAN AND WET PRIOR TO OBTAINING TEMPERATURE.**

**USE THE TEMPERATURE OF THE WET BULB
TABLE II-7-2 LOCATED ON PAGE II-7-14(3144.1D)
TO CALCULATE DEW POINT TEMPERATURE**

TEMPERATURE/DEW POINT & WET BULB TEMPERATURE (COLS 11/12/20)

- TEMPERATURE COL 11:

- RECORD THE DRY BULB TEMP TO THE NEAREST TENTH DEGREE (**CELSIUS**).
- PREFIX SUBZERO TEMPERATURES WITH "M".
- ADD A LEADING ZERO TO SINGLE DIGIT TEMPERATURES (**02.5, 05.7**).

- DEWPOINT TEMP COL 12:

- CALCULATE THE DEW POINT TO NEAREST WHOLE DEGREE CELSIUS.

- WET BULB TEMP COL 20:

- MEASURE THE LOWEST TEMPERATURE OBSERVED.
- RECORD THE WET BULB TO NEAREST TENTH DEGREE CELSIUS.

		(C)	POINT	BULB (C)	SETTING
9	10	11	12	20	(ins) 13
	FEW010 SCT043 BKN180	10.0	08	07.5	
HZ	SCT008 BKN040	10.0	08	08.3	
-SHRAFG	BKN008 OVC025	10.0	09	09.1	

OBTAINING DEW POINT TEMPERATURE

1. RECORD BOTH WET/DRY BULB TEMPERATURES IN DEGREES FARENHEIT.
2. OPEN BOOK (NAVMETOC COMINST 3144.1D) TO TABLE II-7-2 (PAGES II-7-14 TO II-7-27).
3. CALCULATE DIFFERENCE BETWEEN DRY BULB AND WET BULB. THIS NUMBER WILL BE READ ACROSS THE TOP OF TABLE HORIZONTALLY.
4. FIND YOUR WET BULB TEMPERATURE ON THE LEFT MARGIN OF TABLE (VERTICALLY).
5. WHERE BOTH NUMBERS CONNECT IS THE DEW POINT TEMPERATURE.

EXAMPLE: DRY BULB = 78degF

WET BULB = 72degF

6deg diff.

=> DEW POINT = 69degF

BAROMETRIC PRESSURE COMPUTATIONS

- **3 SEPARATE PRESSURE PARAMETERS:**
 1. STATION PRESSURE
 2. SEA LEVEL PRESSURE
 3. ALTIMETER SETTING

- **STEPS TO FOLLOW: (*STATION PRESSURE*)**
 1. READ THE BAROMETER IN INCHES, ROUNDED TO THE NEAREST 5/1000TH.
EX. 30.252 WOULD BE **30.250**
 2. ENTER THIS VALUE AS YOUR STATION PRESSURE IN ***COLUMN 22***.

- **ENTER/COMPUTE STATION PRESSURE (COL 22), SEA LEVEL PRESSURE (COL 22A), AND THEN ALTIMETER SETTING (COL 13).**

REMARKS AND SUPPLEMENTAL	STATION	SEA LEVEL	TOTAL	OBSERVER'S
CODED DATA	PRESSURE	PRESSURE	SKY	INITIALS
	(inches)	hPa	COVER	
14	22	22a	17	15
	30.250			
	30.050			
	29.965			

SEA LEVEL PRESSURE (COL 22a)

COMPUTATION PROCEDURES:

1. DETERMINE THE HEIGHT OF THE BAROMETER ABOVE SEA LEVEL: (CG-47 CLASS **APPROX 60 FT**)
2. USING AN ADDITIVE REDUCTION CONSTANT TABLE, DETERMINE THE CORRECTION FOR A BAROMETER AT **60 FT**. (TABLE II-6-2)

STANDARD CORRECTION 60FT = .064"

3. ADD CORRECTION TO THE STATION PRESSURE:

STATION PRESSURE: 30.250

CORRECTION: +.064

SEA LEVEL PRESSURE: 30.314 INCHES

4. CONVERT TO MILLIBARS USING AVAILABLE CONVERSION TABLES (TABLE II-6-1)

30.314 = 1026.5 MILLIBARS.

5. ENTER **265** IN COL 22a

REMARKS AND SUPPLEMENTAL CODED DATA	STATION PRESSURE (inches)	SEA LEVEL PRESSURE	TOTAL SKY COVER	OBSERVER'S INITIALS
14	22	22a	17	15
	30.250	265		
	30.050			
	29.965			

ALTIMETER SETTING (COL 13)

- ALTIMETER SETTING IS A PRESSURE VALUE USED BY PILOTS. THIS VALUE MUST BE CORRECTED TO SEA LEVEL. (it is the same as sea level pressure except it is reported in inches):
- NOT REQUIRED FOR QM'S ON SHIPS WITHOUT AN AIR DET.

COMPUTATION PROCEDURES:

1. DETERMINE STATION PRESSURE: **30.250"**
2. ADD ADDITIVE CONSTANT (table II-6-2). THIS VALUE IS THE **DISTANCE FROM THE BAROMETER TO SEA LEVEL**: (WE USE **60 FT**).

STATION PRESSURE: 30.250
60FT CORRECTION: + .064
ALTIMETER SETTING: 30.314
ROUND: 30.314 TO 30.31

3. ENTER THE NEAREST 1/100TH.

PRESENT WEATHER	SKY CONDITION	TEMP (C)	DEW POINT	WET BULB (C)	ALTIMETER SETTING (ins) 13
9	10	11	12	20	
	FEW010 SCT045 BKN180	10.2	08	07	3031
HZ	SCT008 BKN040	10.2	08	08	
-SHRAFG	BKN008 OVC025	10.2	09	09	

PRESSURE COMPUTATION EXERCISE

GIVEN THE FOLLOWING, DETERMINE SEA LEVEL
PRESSURE AND ALTIMETER SETTINGS.

REQUIRED DATA:

BAROMETER HEIGHT :

55 FT

COL 22:

30.050

COL 22:

29.965

CORRECTION

CORRECTION

SEA LVL PRES

SEA LVL PRES

CONVERT TO MB

CONVERT TO MB

COL 22a ENTRY

COL 22a ENTRY

ALTIMETER

ALTIMETER

COL 13 ENTRY

COL 13 ENTRY

TABLE II-6-2, PG II-6-13

STATION ELEV (FT)	INCHES Hg	Mb	STATION ELEV (FT)	INCHES Hg	Mb	STATION ELEV (FT)	INCHES Hg	Mb
26	.028	.939	37	.039	1.337	49	.052	1.771
27	.029	.976	38	.041	1.373	50	.053	1.807
28	.030	1.012	39	.042	1.409	51	.054	1.843
29	.031	1.048	40	.043	1.445	52	.055	1.879
30	.032	1.084	41	.044	1.481	53	.057	1.915
31	.033	1.120	42	.045	1.518	54	.058	1.951
32	.034	1.156	43	.046	1.554	55	.059	1.987
33	.035	1.192	44	.047	1.590	56	.060	2.023
34	.036	1.229	45	.048	1.626	57	.061	2.060
35	.037	1.265	46	.049	1.662	58	.062	2.096
36	.038	1.301	47	.050	1.698	59	.063	2.132
			48	.051	1.734	60	.064	2.168

PRESSURE COMPUTATIONS

ANSWERS

GIVEN THE FOLLOWING, DETERMINE SEA LEVEL
PRESSURE AND ALTIMETER SETTINGS.

REQUIRED DATA:

BAROMETER HEIGHT : 55 FT

COL 22: **30.050**
29.965

CORRECTION **+ .059**

SEA LVL PRES **30.109**

CONVERT TO MB **1019.6**

COL 22a ENTRY **196**

ALTIMETER **30.11**

COL 13 ENTRY **3011**

COL 22:

CORRECTION **+ .059**

SEA LVL PRES **30.024**

CONVERT TO MB **1016.7**

COL 22a ENTRY **167**

ALTIMETER **30.02**

COL 13 ENTRY **3002**

PRESENT WEATHER	SKY CONDITION	TEMP (C)	DEW POINT	WET BULB (C)	ALTIMETER SETTING (ins)
9	10	11	12	20	13
	FEW010 SCT045 BKN180	10	08	07	3028
HZ	SCT008 BKN040	10	08	08	3011
-SHRAFG	SCT008 BKN025	10	09	09	3002

REMARKS AND SUPPLEMENTAL CODED DATA	STATION PRESSURE (inches)	SEA LEVEL PRESSURE	TOTAL SKY COVER	OBSERVER'S INITIALS
14	22	22a	17	15
	30.250	265		
	30.050	196		
	29.965	167		

TOTAL SKY COVER & OBSERVER INITIALS (COLS 17 & 18)

- **COLUMN 17 TOTAL SKY COVER:**

ENTER THE TOTAL AMOUNT OF OBSERVED
CLOUDS COVERING THE CELESTIAL DOME

ENTER ONLY 0 THROUGH 8

- **OBSERVERS INITIALS:**

PRINT YOUR INITIALS **CLEARLY**

REMARKS AND SUPPLEMENTAL CODED DATA	STATION PRESSURE (inches)	SEA LEVEL PRESSURE	TOTAL SKY COVER	OBSERVER'S INITIALS
14	22	22a	17	15
	30.250	265	5	GB
	30.050	196	7	CS
	29.965	167	8	DC

REVIEW

(COLS 9-22a)

- COL 09 - PRESENT WEATHER:

- ENTER PRESENT WEATHER IN ORDER OF PRECEDENCE USING TABLE II-5-1 OF 3144.1D.

- COL 10 - SKY CONDITION:

- USE TABLE II-3-8 OF 3144.1D TO MATCH THE PROPER SKY COVER CONTRACTION TO THE AMOUNT OF EACH LAYER PRESENT.
- USE THE SUMMATION PRINCIPLE TO ADD UP INDIVIDUAL CLOUD LAYERS FROM THE LOWEST TO THE HIGHEST LAYER.
- CUMULATIVE TOTALS OF ALL LAYERS CANNOT EXCEED 8/8THS.

- COLS 11,12,20 - TEMPERATURE, DEWPOINT & WET BULB :

- ENSURE **AIR TEMP AND WET BULB TEMP** ARE TAKEN IN AN AREA THAT IS **SHADY, WELL VENTILATED** AND FREE FROM SHIPBOARD VENTILATION SOURCES.
- ENSURE **WET BULB** SOCK IS CLEAN AND WET.
- CALCULATE DEWPOINT USING **TABLES II-7-2 OF THE 3144.1D.**

REVIEW

(COLS 9-22a CONT)

BAROMETRIC PRESSURE

COLS 13, 22, 22a:

- **COL 22 - STATION PRESSURE:**
 - PRESSURE READING TAKEN DIRECTLY FROM THE BAROMETER (ON BRIDGE).
- **COL 22a - SEA LEVEL PRESSURE:**
 - USING THE ADDITIVE CONSTANT TABLE II-6-2 IN THE 3144.1D, ADD THE CORRECTION VALUE THAT REPRESENTS THE HEIGHT OF THE BAROMETER ABOVE SEA LEVEL .
 - CONVERT TO MILLIBARS FOR COL 22a ENTRY.
- **COL 13 - ALTIMETER SETTING:**
 - MAY BE REQUIRED ON SHIPS WITH A FLIGHT DECK; OTHERWISE, THIS IS NOT A REQUIRED ENTRY.

REVIEW

(COLS 9-22a CONT)

- **COL 14 - REMARKS:**

- NOT REQUIRED FOR QUARTERMASTERS, BUT SEVERE WEATHER CONDITIONS SHOULD BE NOTED WHENEVER POSSIBLE.

- **COL 17 - TOTAL SKY COVER:**

- USING THE CONTRACTIONS FROM COL 10, ENTER THE VALUE THAT REPRESENTS THE TOTAL COVERAGE.
- CAN BE NO MORE THAN 8 OR 8/8TH'S.

- **COL 15 - OBSERVERS INITIALS:**

- ENTER OBSERVERS INITIALS (NEATLY).

SHIPS POSITION, STATUS & SEA CONDITIONS (COLS A-G)

COL A: SHIPS POSITION (LATITUDE & LONGITUDE)

1. “Q” QUADRANT OF THE GLOBE

WEST LONGITUDE: NORTH LATITUDE = 7

SOUTH LATITUDE = 5

EAST LONGITUDE: NORTH LATITUDE = 1

SOUTH LATITUDE = 3

2. LATITUDE (3 COLS):

- ENTER IN WHOLE DEGREES AND TENTHS

EX: 32.47.4N = 32.7

ENTER La 3, La 2, La 7

3. LONGITUDE (4 COLS):

- ENTER IN WHOLE DEGREES AND TENTHS

EX: 125.36.5W = 125.6W

- **ENTER Lo 1, Lo 2, Lo 5, Lo 6**

SHIP'S POSITION (A)								SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
LAT				LON									
Q	La	La	La	Lo	Lo	Lo	Lo						
								B	C	D	E	F	G
7	3	2	7	1	2	5	6						
7	3	2	7	1	2	5	6						
7	3	2	7	1	2	5	6						

SHIPS COURSE & SPEED AND SEA TEMP (COLS B,C AND D)

- COL B SHIPS COURSE:

- ENTER SHIPS TRUE COURSE **TO THE NEAREST DEGREE**. **EX:** 321, 320, 333. 335
- ENTER “-” WHEN SHIP IS NOT UNDERWAY.

- COL C SHIPS SPEED:

- ENTER SHIPS SPEED TO THE NEAREST WHOLE KNOT.
- ENTER “-” WHEN THE SHIP IS NOT UNDERWAY.
- PREFIX SPEEDS LESS THAN 10 KNOTS WITH A ZERO.

- COLD SEA WATER TEMP:

- ENTER SEA TEMP TO THE NEAREST 1/10 OF A DEGREE CELSIUS.
- ENTER “M’ FOR MISSING DATA.

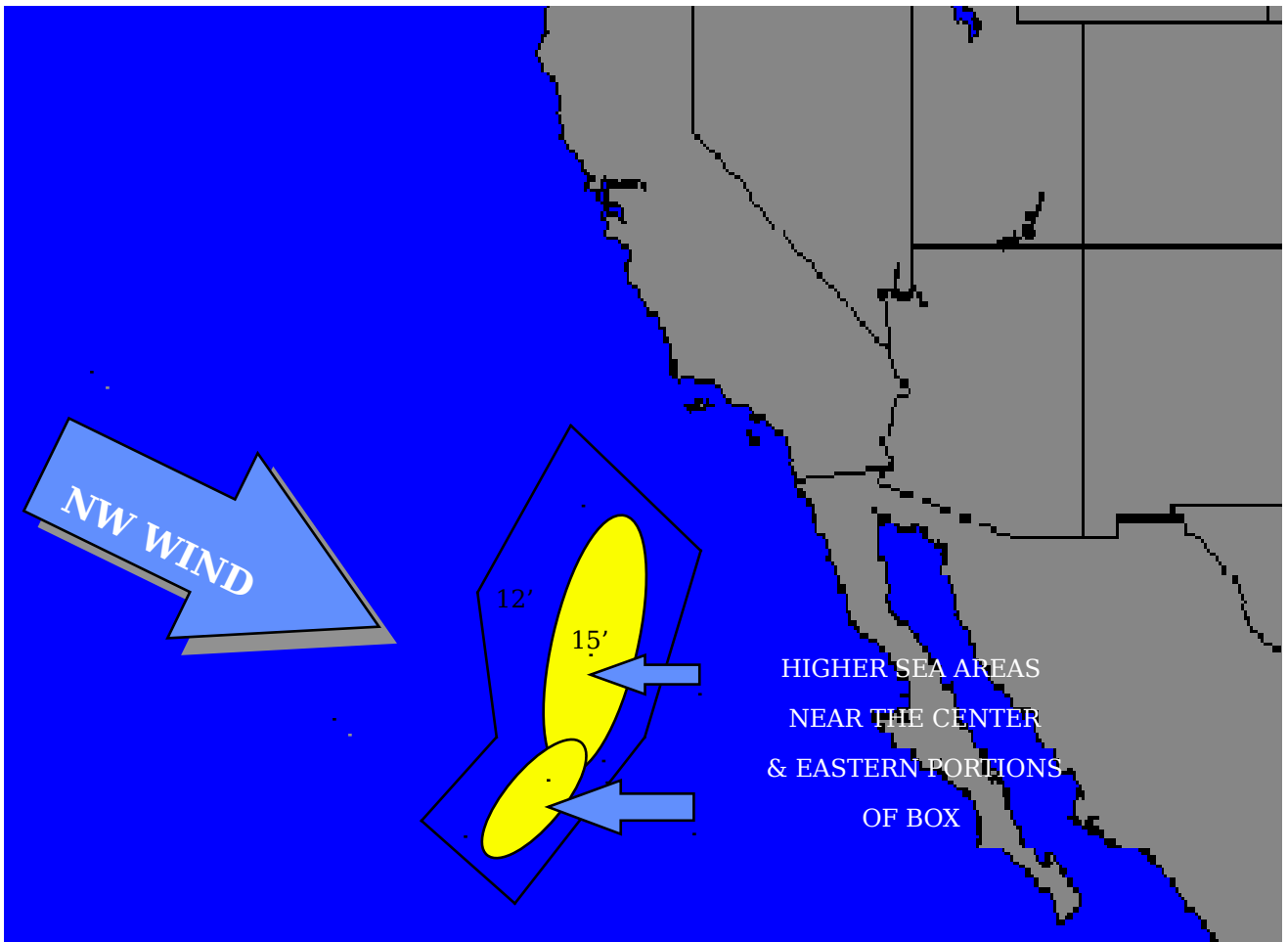
EX: 10.5, 10.0

SHIP'S POSITION (A)								SHIP'S COURSE
---------------------------	--	--	--	--	--	--	--	--

SEA WAVES DEFINITIONS

- **SEA WAVES:** SEA WAVES ARE WAVES GENERATED BY THE TRUE WIND OBSERVED IN COLS 3 & 4.
- **WAVE PERIOD:** THE TIME INTERVAL BETWEEN THE PASSAGE FROM ONE WAVE CREST TO THE NEXT.
- **SEA WAVE HEIGHT:** THE HEIGHTS OF THESE WAVES WILL DEPEND UPON THE AVERAGE SPEED OF THE WINDS OVER A GIVEN PERIOD OF TIME DEPENDING ON AVAILABLE FETCH.
- **WHAT IS FETCH?:** THE DISTANCE WIND MUST BLOW OVER A BODY OF WATER TO ATTAIN A MATHEMATICAL MAX WAVE HEIGHT.
- **FETCH LIMITED:** NOT ENOUGH FETCH AVAILABLE FOR SEAS TO ATTAIN MAX HEIGHT:

EX: NORTHWEST WIND AT 30 KTS
50 NM WEST OF SAN DIEGO.



SEA WAVES (COL E)

- **AVERAGE WAVE PERIOD:**
 - ENTER IN SECONDS USING TENS AND UNITS
 - FOR CALM SEAS ENTER **“00”**
 - FOR A CONFUSED SEA WAVE STATE (CANNOT DETERMINE **PERIOD** ENTER **“99”**
- **SIGNIFICANT WAVE HEIGHT:**
 - SIGNIFICANT WAVE HEIGHT IS THE HIGHEST **1/3** OF WAVES OBSERVED. ENTER USING TENS AND UNITS
 - ENTER **“00”** FOR CALM SEAS.
- **NOTE:** SEA WAVE PERIOD MAY BE CONFUSED, BUT THE HEIGHT WILL NOT.

SWELL WAVES

- WHAT ARE SWELL WAVES:

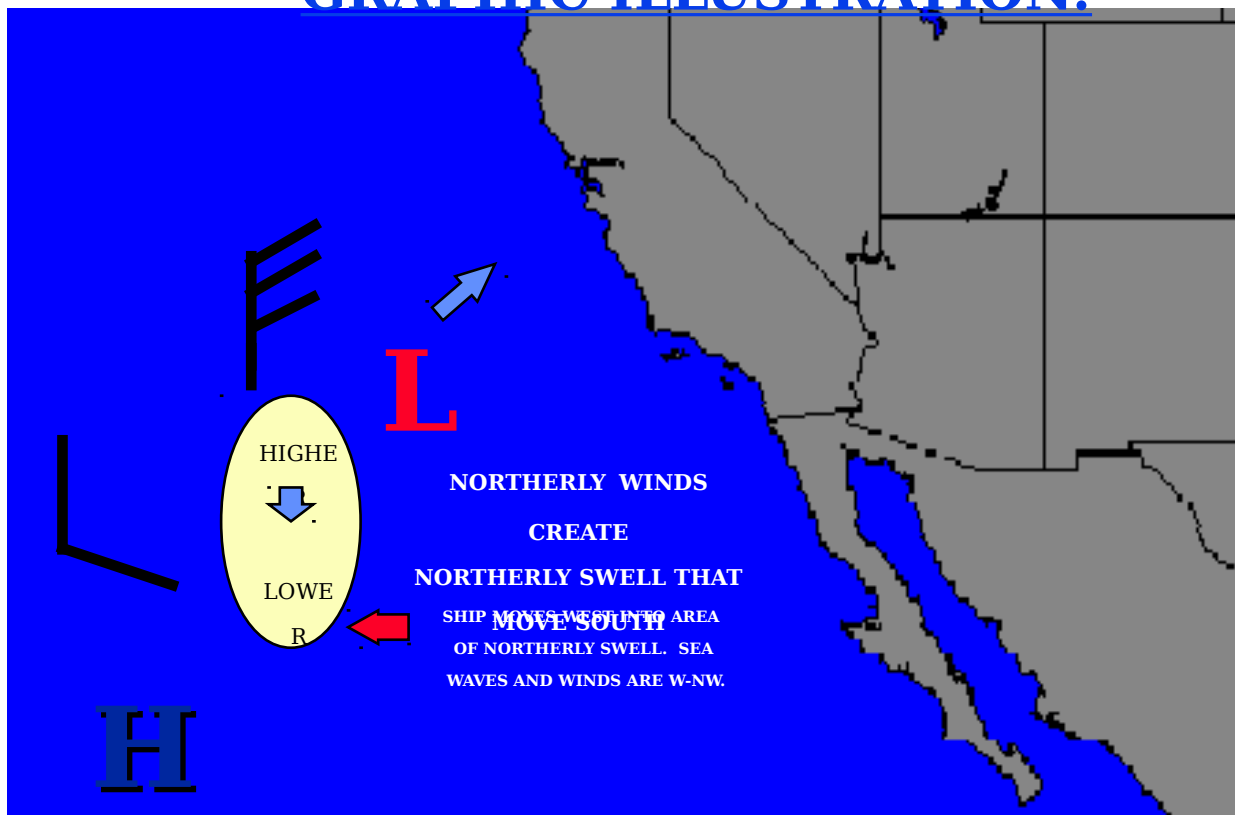
- SWELL WAVES ARE WAVES GENERATED IN AN AREA WELL AWAY FROM YOUR VESSEL.

- CHARACTERISTICS:

- SWELLS OFTEN COME FROM A DIRECTION THAT IS DIFFERENT FROM THE TRUE WIND. (30 OR MORE DEGREES)
- LONGER WAVE PERIOD (LONGER WAVELENGTH)

OFTEN CAUSES THE MOST NOTABLE PITCH/ROLL.

GRAPHIC ILLUSTRATION:



ENTERING SWELL WAVES (COLS F & G)

- **COL F:** PRIMARY SWELL WAVE DATA
- **COL G:** SECONDARY SWELL WAVE DATA
- **SWELL DIRECTION** (FIRST 2 DIGITS IN EACH GROUP):
 - ENTER IN HUNDREDS AND TENS OF DEGREES
- **SWELL PERIOD** (SECOND 2 DIGITS IN EACH GROUP):
 - ENTER THE PERIOD OF THE SWELLS IN SECONDS.
 - ENTER "99" IF CONFUSED.
- **SWELL HEIGHT** (LAST 2 DIGITS IN EACH GROUP):
 - ENTER THE **SIGNIFICANT WAVE HEIGHT** IN FEET

SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
B	C	D	E	F	G
076	08	09.7	0304	360808	131002
090	15	09.5	0202	359905	
		10.0	0000	350802	

REVIEW

(COLS A-G)

- COL A - LATITUDE & LONGITUDE:

- ENTER IN WHOLE DEGREES AND TENTHS
- DETERMINE TENTHS DIGIT BY DIVIDING BY 6 AND DISREGARDING THE REMAINDER.

- COLS B & C - SHIPS COURSE & SPEED:

- ENTER COURSE TO THE NEAREST DEGREE
- ENTER “-” WHEN ANCHORED
- PREFIX SPEEDS <10 KNOTS WITH A ZERO.

- COL D - SEA WATER TEMP:

- ENTER TO THE NEAREST 1/10TH DEGREE CELSIUS.

- COL E - SEA WAVES:

- ENTER PERIOD IN SECONDS AND HEIGHT IN FEET
- ENTER “0000” FOR CALM
- ENTER “99” FOR CONFUSED PERIOD (9903)

- COLS F & G - SWELL WAVES:

CRITERIA FOR ENTERING BOTH IS IDENTICAL (2 DIGITS)

- ENTER DIRECTION IN HUNDREDS AND TENS OF DEGREES.
- ENTER PERIOD IN SECONDS (99 FOR CONFUSED)
- ENTER SWELLS IN FEET (**SIGNIFICANT WAVE HEIGHT**)